

Detailed Claim Listing

The following is a detailed listing of all claims that are, or were, pending in the present application. Please amend claims 1, 8, 11-12, 16, 19-20, 22, 25, 31-33, 36-37, 43-45, 49-51, and 54-56 as set forth in this detailed listing.

- 3403 632
1. (Currently Amended): A liquid dispensation device, comprising
- a) a pin element moveably oriented to move between a retracted position, ~~wherein the pin element is disposed within the device~~, and an extended position, ~~wherein a portion of the pin element is external to the device~~; and
- b) a drive element operatively coupled with the pin element, wherein the drive element is not mechanically coupled with the pin element.

2. (Original) The device of claim 1 wherein the drive element is magnetically coupled with the pin element.

3. (Original) The device of claim 1 further comprising an encasement defining a chamber and an orifice communicating with the chamber, wherein the pin element is slideably received within the chamber, the pin element moving between the retracted position and the extended position, the extended position describing a portion of the pin element extending out of the chamber through the orifice.

4. (Original) The device of claim 1 wherein the drive element is a magnet.

5. (Original) The device of claim 4 wherein the magnet is a rare earth magnet.

6. (Original) The device of claim 5 wherein the rare earth magnet is SmCo.

7. (Original) The device of claim 5 wherein the rare earth magnet is NdFeB.

8. (Currently Amended) ~~The device of claim 5 wherein the drive element is~~ A liquid dispensation device, comprising:

- a) a pin element moveably oriented to move between a retracted position, wherein the pin element is disposed within the device, and an extended position, wherein a portion of the pin element is external to the device; and
- b) a drive element operatively coupled with the pin element, wherein the drive element is a magnet operating the pin element, the magnet being selectively moveable by fluid pressure.

9. (Original) The device of claim 8 further comprising a second drive element, the second drive element being a magnet.

10. (Withdrawn)

11. (Original) The device of claim 1 further comprising a driven element in contact with the pin element, the driven element being magnetically coupled with the drive element, wherein the drive element is oriented to magnetically move the driven element.

12. (Currently Amended) A liquid dispensation device, comprising


- a) a contact element moveably oriented to move between a retracted position and an extended position, ~~the contact element configured to dispense liquid without gravitational assistance;~~ and
- b) a drive element operatively coupled with the contact element, wherein the drive element is operating the contact element into contact with a substrate, wherein the drive element is not mechanically coupled with the contact element.

13. (Original) The device of claim 12 wherein the drive element is magnetically coupled with the contact element.

14. (Original) The device of claim 12 further comprising an encasement defining a chamber and an orifice communicating with the chamber, wherein the contact element is slideably received within the chamber, the contact element moving between the retracted position and the extended position, the extended position describing a portion of the contact element extending out of the chamber through the orifice.

15. (Original) The device of claim 13 wherein the drive element is a magnet.

16. (Currently Amended) ~~The device of claim 15~~ A liquid dispensation device, comprising:

- 
- a) a contact element moveably oriented to move between a retracted position and an extended position, the contact element configured to dispense liquid without gravitational assistance; and
 - b) a drive element operatively coupled with the contact element, wherein the drive element is a magnet operating the contact element into contact with a substrate, wherein the drive element is selectively moveable by fluid pressure.

17. (Original) The device of claim 16 further comprising a second drive element, the second drive element being a magnet.

18. (Withdrawn)

19. (Original) The device of claim 12 further comprising a driven element in contact with the contact element, the driven element being magnetically coupled with the drive element, wherein the drive element is oriented to magnetically move the driven element.

20. (Currently Amended) A liquid dispensation device, comprising

- a) a nozzle defining a chamber and a dispensation orifice communicating with the chamber;

- b) a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position and a dispensing position ~~in which a portion of the contact end extends out of the chamber through the dispensation orifice, the contact end configured to dispense liquid without gravitational assistance; and~~
- c) a drive element magnetically coupled with the transfer pin, wherein the drive element is oriented to magnetically move the transfer pin, wherein the drive element is not mechanically coupled with the transfer pin.

21. (Original) The device of claim 20 wherein the drive element is a magnet.

22. (Currently Amended) ~~The device of claim 21~~ A liquid dispensation device, comprising:

- a) a nozzle defining a chamber and a dispensation orifice communicating with the chamber;
- b) a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position and a dispensing position in which a portion of the contact end extends out of the chamber through the dispensation orifice, the contact end configured to dispense liquid without gravitational assistance; and
- c) a drive element magnetically coupled with the transfer pin, wherein the drive element is a magnet oriented to magnetically move the transfer pin, wherein the drive element is selectively moveable by fluid pressure.

23. (Original) The device of claim 22 further comprising a second drive element, the second drive element being a selectively moveable magnet.

24. (Withdrawn)

25. (Original) The device of claim 20 further comprising a driven element in contact with the transfer pin, the driven element being magnetically coupled with the drive element, wherein the drive element is oriented to magnetically move the driven element.

26. (Original) The device of claim 20, further comprising a liquid receiving opening in the nozzle, the liquid receiving opening being in fluid communication with the chamber.

27. (Original) The device of claim 26 wherein the liquid receiving opening is opposite the dispensation orifice.

28. (Original) The device of claim 20 wherein the transfer pin in the dispensing position disengagingly contacts the target substrate.

29. (Original) The device of claim 20 wherein the transfer pin motion is hydraulically restrained by the liquid in the chamber.


30. (Original) The device of claim 20 wherein the transfer pin inhibits any inadvertent escape of the liquid from the dispensation orifice.

31. (Currently Amended) A dispensation device, comprising

- a) a nozzle defining a chamber and a dispensation orifice communicating with the chamber;
- b) a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position in which the transfer pin is disposed within the chamber and a dispensing position in which a portion of the contact end extends out of the chamber through the dispensation orifice;
- c) a driven element in contact with the transfer pin; and
- d) a drive element magnetically coupled with the driven element, the drive element oriented to magnetically move the driven element, whereby the

drive element magnetically positions the transfer pin, wherein the drive element is not mechanically coupled with the driven element.

32. (Currently Amended) ~~The device of claim 31, further comprising~~ A dispensation device, comprising:


- 
- a) a nozzle defining a chamber and a dispensation orifice communicating with the chamber;
 - b) a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position in which the transfer pin is disposed within the chamber and a dispensing position in which a portion of the contact end extends out of the chamber through the dispensation orifice;
 - c) a driven element in contact with the transfer pin;
 - d) a first drive element magnetically coupled with the driven element, the first drive element oriented to magnetically move the driven element, whereby the first drive element magnetically positions the transfer pin;
and
 - e) a second drive element acting concurrently with the first drive element, the second drive element magnetically coupled with the driven element, the second drive element being oriented to magnetically move the driven element, whereby the second drive element magnetically positions the transfer pin.

33. (Currently Amended) The device of claim 31 wherein the drive element magnetically defines a positional limit for ~~the~~a retracted position and ~~the~~a dispensing position of the transfer pin.

34. (Original) The device of claim 33 wherein the drive element magnetically controls a contact force for the transfer pin with a target substrate.

35. (Original) The device of claim 34 wherein the drive element magnetically biases the transfer pin in a direction parallel to the direction of any movement of the drive element.

36. (Currently Amended) ~~The device of claim 31~~ A dispensation device, comprising:

- 
- a) a nozzle defining a chamber and a dispensation orifice communicating with the chamber;
 - b) a transfer pin having a contact end, the transfer pin moveably received within the chamber and moveable between a retracted position in which the transfer pin is disposed within the chamber and a dispensing position in which a portion of the contact end extends out of the chamber through the dispensation orifice;
 - c) a driven element in contact with the transfer pin; and
 - d) a drive element magnetically coupled with the driven element, the drive element oriented to magnetically move the driven element, whereby the drive element magnetically positions the transfer pin, wherein the drive element is selectively positioned by fluid pressure against an opposing spring tension, the fluid pressure increasing to bias the drive element toward the dispensation orifice, the drive element being biased away from the dispensation orifice by a decrease in the fluid pressure.

37. (Currently Amended) A method of dispensing liquid, comprising the steps of

- a) directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice; and
- b) moving a transfer pin from a retracted position within the chamber to an extended position, wherein the transfer pin is not mechanically coupled to a drive element ~~a portion of the transfer pin is external to the chamber,~~ whereby the transfer pin carries an amount of liquid from the chamber to the substrate.

38. (Original) The method of claim 37, further comprising the step of retracting the transfer pin to a retracted position in the chamber.

39. (Original) The method of claim 37 wherein the step of moving the transfer pin further includes magnetically moving the transfer pin.

40. (Original) The method of claim 37 wherein the step of moving the transfer pin further includes selectively moving the transfer pin by fluid pressure.

41. (Original) The method of claim 37 wherein the transfer pin disengagingly contacts the substrate.

42. (Original) The method of claim 37 wherein the transfer pin motion is hydraulically restrained by the liquid in the chamber.

43. (Currently Amended) A method of dispensing liquid, comprising the steps of

- a) directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice;
- b) magnetically moving a transfer pin through the chamber and into contact with a substrate, wherein the transfer pin is not mechanically coupled to a drive element ~~whereby the transfer pin carries an amount of liquid from the chamber to the substrate without gravitational assistance.~~

44. (Currently Amended) A liquid dispensation device, comprising

- a) a contact element moveably oriented to move between a retracted position and an extended position; and
- b) a drive element operatively coupled with the contact element, wherein the drive element is not mechanically coupled with the contact element, wherein the drive element is operating the contact element into contact with a substrate, the drive element being selectively moveable by fluid pressure.

45. (Currently Amended) ~~The device of claim 44~~ A liquid dispensation device, comprising:

- a) a contact element moveably oriented to move between a retracted position and an extended position; and
- b) a drive element operatively coupled with the contact element, wherein the drive element is a magnet operating the contact element into contact with a substrate, the drive element being selectively moveable by fluid pressure.

46. (Previously Presented) The device of claim 45 further comprising a second drive element, the second drive element being a magnet.

47. (Previously Presented) The device of claim 44 further comprising a nozzle defining a chamber and a dispensation orifice communicating with the chamber, wherein the contact element is slideably receivable within the chamber.

48. (Previously Presented) The device of claim 47 wherein the contact element is configured to move between a retracted position and an extended position in which a portion of the contact element extends out of the chamber through the dispensation orifice.

49. (Previously Presented) The device of claim 44 further comprising a driven element associated with the contact element, the drive element being configured to urge the driven element into contact with the substrate.

50. (Currently Amended) ~~The device of claim 49 wherein the transfer pin is magnetically positionable by the drive element;~~ A liquid dispensation device, comprising:

- a) a contact element moveably oriented to move between a retracted position and an extended position, the contact element having a driven element; and
- b) a drive element operatively coupled with the driven element, wherein the drive element is configured to magnetically position the driven element

whereby the contact element is moveable into contact with a substrate, the drive element being selectively moveable by fluid pressure.

51. (Currently Amended) A method of dispensing liquid, comprising the steps of
- a) directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice; and
 - b) selectively moving a transfer pin by fluid pressure toward a substrate through the chamber, wherein the transfer pin is not mechanically coupled to any drive element, whereby the transfer pin carries an amount of liquid from the chamber to the substrate.

52. (Previously Presented) The method of claim 51 wherein selectively moving the transfer pin by fluid pressure further comprises selectively moving a first drive element by fluid pressure, the first drive element being operably coupled with the transfer pin.


53. (Previously Presented) The method of claim 52 wherein selectively moving a first drive element by fluid pressure further comprises moving a driven element associated with the transfer pin, the first drive element being operably coupled with the driven element.

54. (Currently Amended) ~~The method of claim 52~~ A method of dispensing liquid comprising:

- a) directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice; and
- b) selectively moving a first drive element by fluid pressure, wherein the first drive element is a magnet operably coupled to a transfer pin, and thereby moving the transfer pin toward a substrate through the chamber, whereby the transfer pin carries an amount of liquid from the chamber to the substrate.

55. (Currently Amended) ~~The method of claim 52 wherein selectively moving the transfer pin by fluid pressure further comprises moving a second drive element by fluid pressure,~~

~~the second drive element being operably coupled with the transfer pin.~~ A method of dispensing liquid comprising:

- 
- a) directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice; and
 - b) selectively moving a first drive element and a second drive element by fluid pressure, wherein the first and second drive elements are operably coupled to a transfer pin, and thereby moving the transfer pin toward a substrate through the chamber, whereby the transfer pin carries an amount of liquid from the chamber to the substrate.

56. (Currently Amended) ~~The method of claim 51 wherein selectively moving the transfer pin further comprises~~ A method of dispensing liquid comprising:

- a) directing a quantity of liquid into a chamber defined by a nozzle, the chamber being in fluid communication with a dispensation orifice; and
- b) selectively and magnetically moving the transfer pin by fluid pressure toward a substrate through the chamber, whereby the transfer pin carries an amount of liquid from the chamber to the substrate.

57. (Previously Presented) The method of claim 51 wherein the transfer pin motion is hydraulically restrained by the liquid in the chamber.

58. (Previously Presented) The method of claim 51 wherein selectively moving the transfer pin by fluid pressure toward a substrate through the chamber further comprises carrying an amount of liquid from the chamber to the substrate without gravitational assistance.
